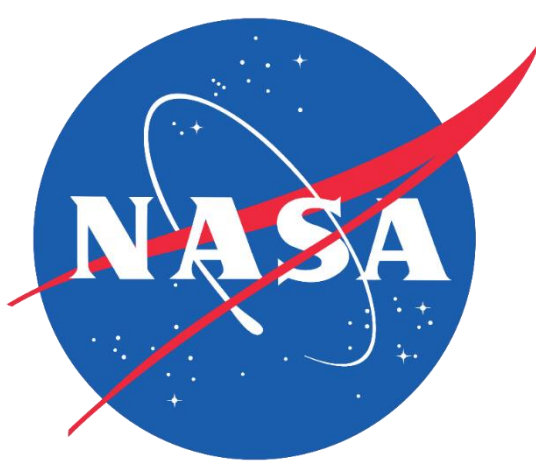




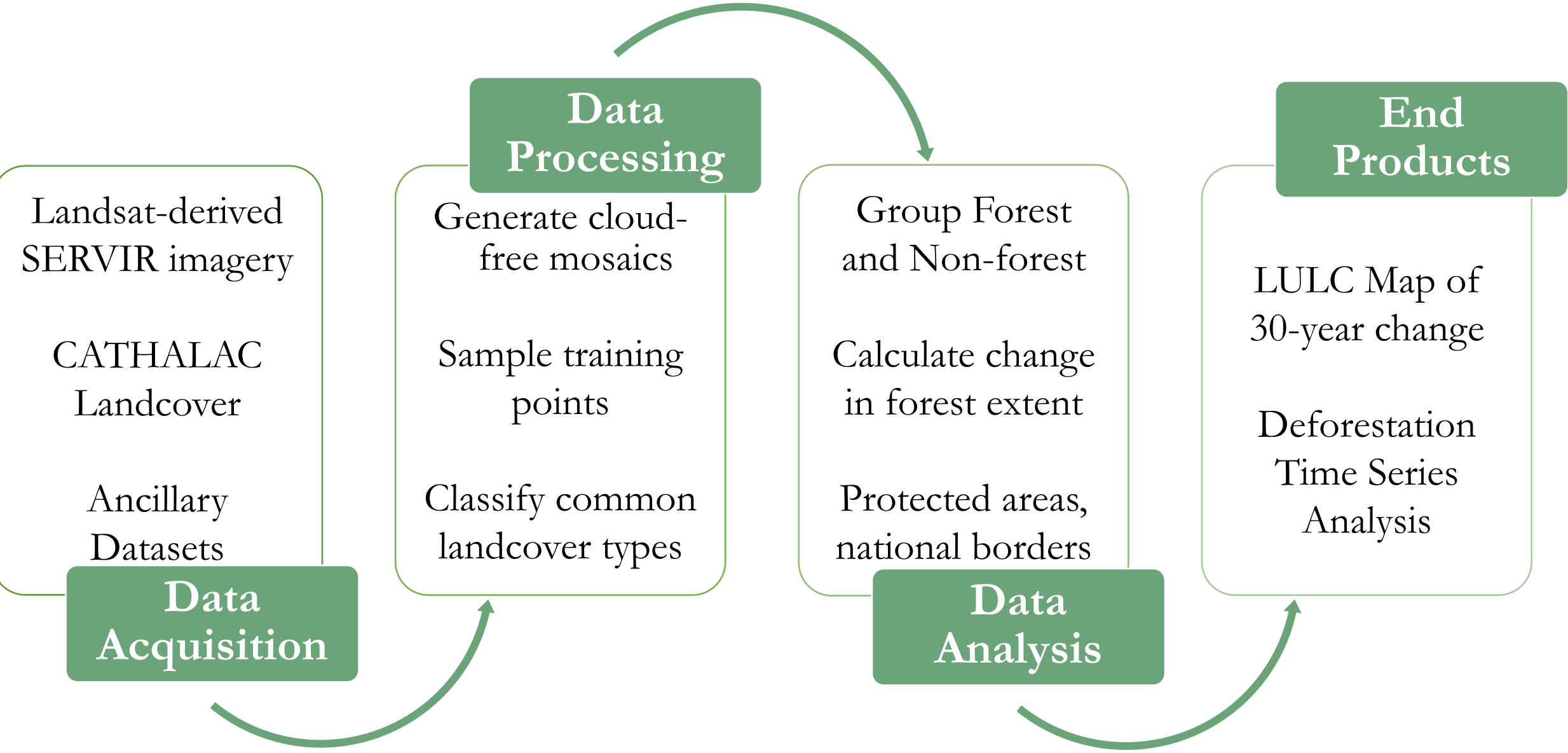
# Assessing Land Cover Change to Inform Management Planning for the Mesoamerican Biological Corridor



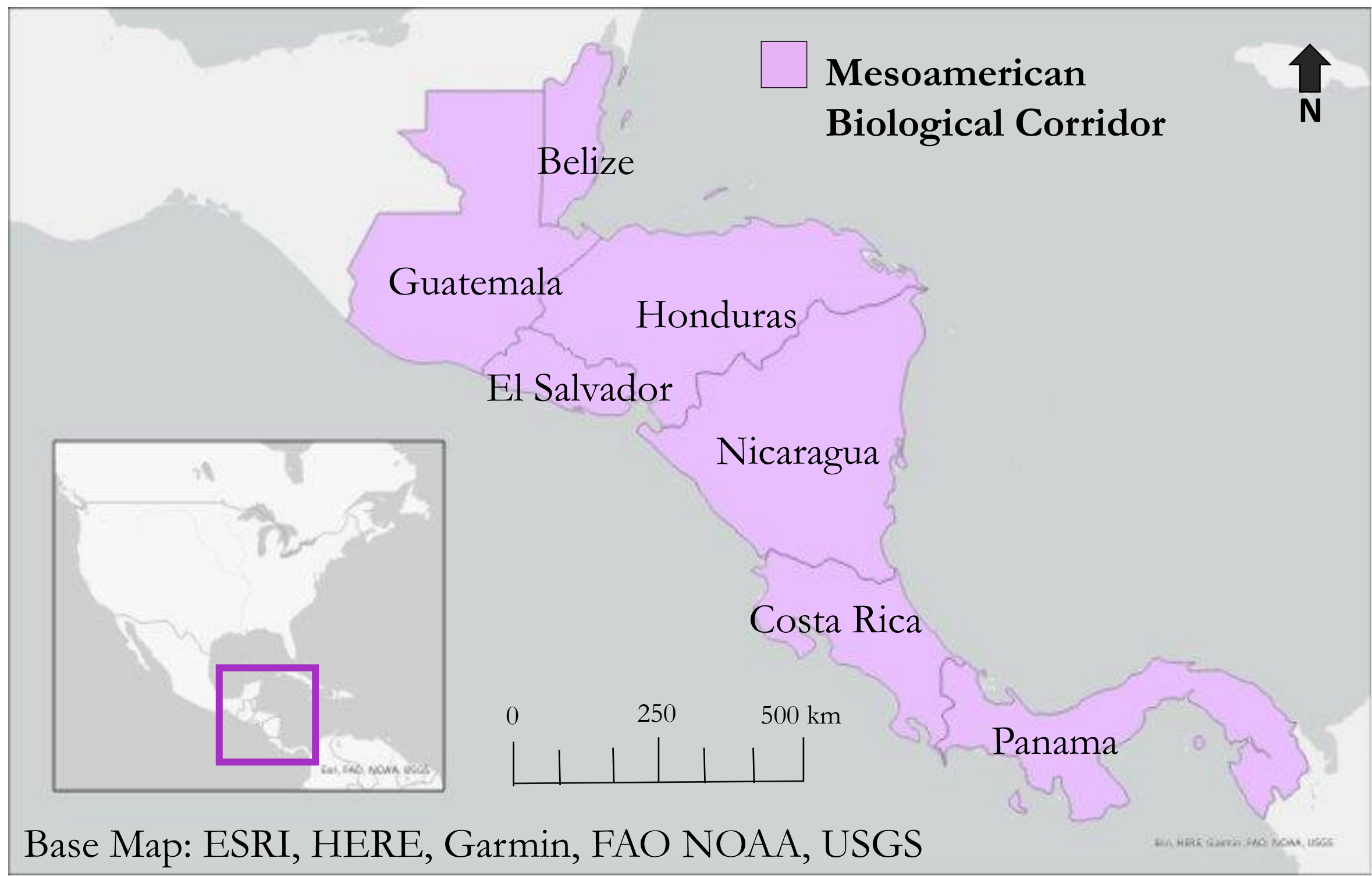
## Abstract

In 1992, Central America and Mexico drew up an agreement to establish the Mesoamerican Biological Corridor (MBC) which defines natural corridors to connect nearly 600 protected areas. The MBC is home to 9% of the world's terrestrial species on 0.7% of the world's landmass, yet this biodiverse area has been impacted by great levels of deforestation. The MBC supports protected areas and the important conservation efforts that are tied into the area's economic and sustainable development. The NASA DEVELOP team partnered with NASA SERVIR, Sistema de la Integración Centroamericana (SICA), Tropical Agriculture Research and High Education Center (CATIE), and Ministries of the Environment for Costa Rica, El Salvador, and Guatemala to assess forest cover change in the MBC. While the southern states of Mexico are included in the MBC, the team excluded Mexico in this study. The team acquired data from Landsat 5 Thematic Mapper (TM), Landsat 7 Enhanced Thematic Mapper Plus (ETM+), Landsat 8 Operational Land Imager (OLI), and Landsat 9 OLI-2 to develop a forest versus non-forest classification. This classification was used to create a Land Use Land Cover Change (LULC) trend map and Deforestation Detection Time Series analysis between 1992 and 2022. The team found that minimum distance classification was the most effective classifier for the project scope. Analysis showed that 6.18% of the study area experience forest loss and 10.99% experienced forest growth. These observations will help partners visualize the evolution and severity of deforestation and allow decision making for future land management and transboundary conservation efforts.

## Methodology



## Study Area



## Team Members

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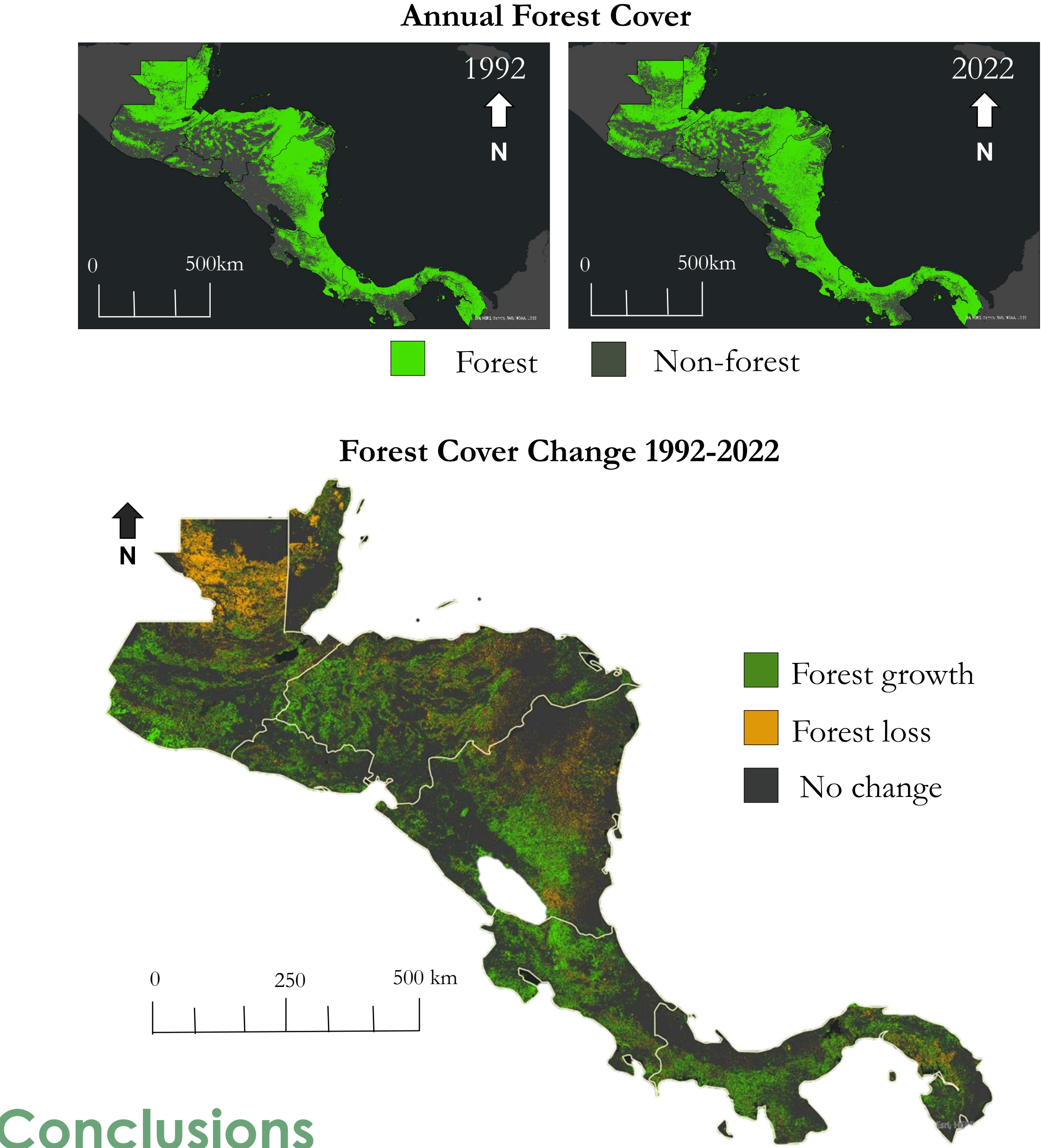
## Objectives

- **Classify** forest and non-forest land cover in the MBC by using a Minimum Distance Classifier
- **Identify** forest cover change in the last 30 years by producing Land Use Land Cover Change (LULC) trend maps of 1992 and 2022
- **Visualize** deforestation at a regional level by generating deforestation time series analysis of the MBC during the study period

## Earth Observations



## Results



## Conclusions

- Accounting for spectral variation in land cover types requires holistic training data.
- Training and deploying a Minimum Distance Classification was the most effective method for classifying forest and non-forest in the MBC
- Analysis showed an overall 6.18% forest loss and a 10.99% forest growth occurred in the MBC between 1992-2022.

## Project Partners

- Sistema de la Integración Centroamericana (**SICA**)
- Tropical Agriculture Research and High Education Center (**CATIE**)
- Ministry of the Environment & Energy (**MINAE**) of Costa Rica
- Ministry of the Environment & Natural Resources (**MARN**) of El Salvador
- Ministry of the Environment & Natural Resources (**MARN**) of Guatemala

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Mesoamerica Ecological Forecasting